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NAVFAC **IGS-07212 (MAY 2002)**

Preparing Activity: LANTNAVFACENGCOM **Based on UFGS-07212N**

ITALIAN GUIDE SPECIFICATIONS

Use for ITALIAN projects only

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SECTION 07212

MINERAL FIBER BLANKET INSULATION
05/02

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NOTE: This guide specification is issued by the Atlantic Division, Naval Facilities Engineering Command for regional use in Italy.

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NOTE: This guide specification covers requirements for mineral fiber blanket thermal insulation in attics, ceilings, walls, and floors. It is intended for both retrofit of existing buildings and new construction.

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NOTE: The following information must be indicated on the drawings:

1. Locations where insulation will be used.

2. Thermal resistance value (R-Value) for each location.

3. Location of vapor retarder, if required.

4. Location and size of attic ventilation openings where required.

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NOTE: Attic Ventilation

1. Provide net, unobstructed ventilation areas to attics over insulated ceilings as recommended by ASHRAE Handbook of Fundamentals, Chapter 21 and as follows:

2. For attics with vapor retarder, provide 0.1

square meter one square foot of net ventilation area for each 30 square meters 300 square feet of attic floor area.

3. For attics without vapor retarder, provide 0.1 square meterone square foot of net ventilation area for each 15 square meters 150 square feet of attic floor area.

4. For insulation of cathedral ceilings, provide at least a 50 mm 2 inch gap between upper face of insulation and underside of roof sheathing. Provide ventilation openings at bottom and top of ventilated cavity; show on drawings.

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NOTE: Develop and specify density, type of material, and thickness of mineral fiber blanket insulation used for sound control based on acoustic analysis. For reduction of sound transmission through walls, select a blanket thickness 13 mm 1/2 inch greater than the wall cavity. Edit this specification accordingly.

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Comments and suggestion on this specification are welcome and should be directed to the technical proponent of the specification. A listing of the technical proponents, including their organization designation and telephone number, is on the Internet.

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

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PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

EUROPEAN COMMITTEE FOR STANDIZATION (EN)

EN 822	(1995) Thermal Insulating Products for Building Applications - Determination of Length and Width

EN 823	(1995) Thermal Insulating Products for Building Applications - Determination of Thickness
EN 824	(1995) Thermal Insulating Products for Building Applications - Determination of Squareness
EN 825	(1995) Thermal Insulating Products for Building Applications - Determination of Flatness
EN 826	(1996) Thermal Insulating Products for Building Applications - Determination of Compression Behavior

INTERNATONAL STANDARDS ORGANIZATION (ISO)

ISO 6946	(1996) Building Components and Building Elements - Thermal Resistance - Calculation Method
ISO 7345	(1996) Thermal Insulation - Physical Quantities and Definitions
ISO 8144-1	(1995) Thermal Insulation - Mineral Wood Mats for Ventilated Roof Spaces - Part 1: Specification for Applications with Restricted Ventilation
ISO 8144-2	(1995) Thermal Insulation - Mineral Wood Mats for Ventilated Roof Spaces - Part 2: Specification for Applications with Restricted Ventilation
ISO 9229	(1991) Thermal Insulation - Materials, Products and Systems - Vocabulary

LEGISLATIVE DECREES (DL)

DL 626	(1994) Application of Several European Union Directives Regarding for Improving the Safety and Health of Workers on the Work Site
DL 494	(1996) Implementation of Instruction 92/57/CEE Concerning the Minimum Safety and Health Requirements to be Accomplished in Temporary or Mobile Work Sites
CM 91	Circular 91 Minister of the Interior 14 September 1961
DM 26	(1984) Classification for the Reaction of

Fire and Approval of Materials for the Prevention of Fire

1.2 SUBMITTALS

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NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item is required.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Recommended codes for Army projects are "RE" for Resident Engineer approval, "ED" for Engineering approval, and "AE" for Architect-Engineer approval. Codes following the "G" typically are not used for Navy projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

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Submit the following in accordance with Section 01330, "Submittal Procedures."

1.2.1 SD-02 Manufacturer's Catalog Data

Blanket insulation

Vapor retarder

Pressure sensitive tape

Accessories

1.2.2 SD-06 Instructions

Insulation

1.3 DELIVERY, STORAGE, AND HANDLING

1.3.1 Delivery

Deliver materials to site in original sealed wrapping bearing manufacturer's name and brand designation, specification number, type, grade, R-value, and class. Store and handle to protect from damage. Do not allow insulation materials to become wet, soiled, crushed, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storing, and protecting of materials before and during installation.

1.3.2 Storage

Inspect materials delivered to the site for damage; unload and store out of weather in manufacturer's original packaging. Store only in dry locations, not subject to open flames or sparks, and easily accessible for inspection and handling.

1.4 SAFETY PRECAUTIONS

1.4.1 Respirators

Provide installers with dust/mist respirators, training in their use, and protective clothing, in accordance with DL 494 and DL 626.

1.4.2 Smoking

Do not smoke during installation of blanket thermal insulation.

1.4.3 Other Safety Concerns

Consider other safety concerns and measures as outlined in DL 494 and DL 626.

1.5 DEFINITIONS

Thermal resistance shall be as calculated in ISO 6946.

PART 2 PRODUCTS

2.1 BLANKET INSULATION

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NOTE: Fire Safety Requirements

1. Most vapor retarder materials and the binder used in some mineral fiber insulations are combustible. Do not leave such material exposed to accessible spaces, but cover with fire retardant finish. For mineral fiber blanket insulation designer may select either kraft paper faced membrane or foil faced reflective membrane to suit local conditions. Each must be rated non-combustible in accordance with DM 26 June 1984 in order to comply with Class O (Zero).

2. See MIL-HDBK-1008, and the requirements of the Host Country for fire retardant classifications required, flame spread and smoke developed ratings, and other fire protection requirements, such as finish materials required in various occupancies.

3. Coverings for mineral fiber/wool mats (batts and rolls) as defined in 3.1 of ISO 8144-1 shall comply with Class O of CM 91. Classes within CM 91 are from 0 to 5, with 0 being the most restrictive.

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Blanket insulation as defined in ISO 9229, ISO 7345, ISO 8144-1 and ISO 8144-2, [blankets without membrane coverings] [and] [blankets with vapor barrier]. Provide materials meeting manufacturer's stated tolerances measured in accordance with EN 822, EN 823, EN 824, EN 825and EN 826.

2.1.1 Thermal Resistance Value (Calculated per ISO 6946 and ISO 7345)

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NOTE: Select R-Value for Thermal Insulation required to meet the energy target/budget as indicated in MIL-HDBK-1190, Facility Planning Design Guide and the requirements of the Host Country. Preferably show R-Value on drawings. If R-Values are not shown on drawings, specify here.

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As indicated

2.1.2 Recycled Materials

Provide Thermal Insulation containing recycled materials to the extent practicable, provided the material meets all other requirements of this section. The minimum required recycled materials content by weight are:

Rock Wool: 75 percent slag
Fiberglass: 20 to 25 percent glass cullet

2.1.3 Prohibited Materials

Provide asbestos-free materials.

2.1.4 Acceptable Products

Certain products manufactured by the following meet the requirements of this specification. Equivalent products by other manufacturers are also acceptable.

ISOVER
Balzaretti Modigliani S.p.A.
via Romagnoli, 6
2016 Milano

Tel: 02/42 431
Fax: 02/412 0325

Habitema, S.r.l.
viale Virgilio, 30c
41010 Modena
Tel: 059/518 313

Eurofibre, S.p.A.
via Venier, 15a
30020 Marcon
Tel: 041/45 8900

2.3 BLOCKING

Wood, metal, unfaced mineral fiber blankets in accordance with ISO 8144-1 and ISO 8144-2, or other approved materials. Use only non-combustible materials for blocking around chimneys and heat producing devices.

2.4 VAPOR RETARDER

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NOTE:

1. Determine the need for a water vapor retarder and its required permeance value based on a project and climate specific moisture analysis. Traditionally, vapor retarders were considered materials having a permeance of 5.72 x 10-8 g/Pa.s.m2 1 perm (grain/h*ft2*in.Hg) or less. However, that value may not be adequate for the particular construction or climate and in some instances a much lower value should be specified.

2. Vapor retarders, where required, can be provided as membranes or, alternatively, vapor retardant finishes labeled by manufacturer as having a water vapor permeance of no more than the required value can be used. Alternate materials include: Paints, vinyl wall coverings, or foil-faced gypsum board. Specify these in Sections 09900, "Painting," Section 09955, "Vinyl-Coated Fabric Wall Covering," or Section 09250, "Gypsum Board," respectively and delete all paragraphs and references relating to vapor retarders from this section.

3. A vapor retarder is only effective if it prevents diffusion of water vapor as well as the passage of moisture laden air through openings and around material. Accordingly, proper installation to assure air tightness by sealing of joints, tears, and around utility penetrations is as important as proper selection of water vapor retarder materials.

4. Vapor retarders not only retard movement of water vapor into building envelope cavities, but also retard drying out of moisture that may have infiltrated the cavity. Accordingly, use vapor retarders only where their need is indicated by the moisture analysis.

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[a. 0.15 mm 6 mil thick polyethylene sheeting and having a water vapor permeance of 5.72 x 10-8g/Pa.s.m2 1 perm or less.]

[b. Kraft paper membrane with the following properties:]

Water Vapor Permeance: [25.50] g/PA.S.m2
Combustion Characteristics: Passing Class 0 in accordance with CM 91

2.5 PRESSURE SENSITIVE TAPE

As recommended by the vapor retarder manufacturer and having a water vapor permeance rating of 5.72 x 10-8 g/Pa.s.m2 one perm or less.

2.6 ACCESSORIES

2.6.1 Adhesive

As recommended by the insulation manufacturer.

2.6.2 Mechanical Fasteners

Corrosion resistant fasteners as recommended by the insulation manufacturer.

2.6.3 Wire Mesh

Corrosion resistant and as recommended by the insulation manufacturer.

PART 3 EXECUTION

3.1 EXISTING CONDITIONS

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Note:

For retrofit projects, inspect facility to determine conditions which may adversely affect execution of work or create safety hazard. Identify relevant conditions on the drawings and, if required, develop additional specification sections for corrective actions. Conditions that warrant investigation:

1. Discolorations or mold growth indicating previous water leaks.

2. Heat producing devices, such as recessed

lighting fixtures, chimneys, and flues.

3. Faulty electrical systems:

(a) Lights dimming or flickering

(b) Fuses blowing

(c) Circuit breakers tripping frequently

(d) Electrical sparks and "glowing" from receptacles

(e) Cover plates on switches and outlets warm to touch.

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Before installing insulation, ensure that areas that will be in contact with the insulation are dry and free of projections which could cause voids, compressed insulation, or punctured vapor retarders. If moisture or other conditions are found that do not allow the workmanlike installation of the insulation, do not proceed but notify Contracting Officer of such conditions.

3.2 PREPARATION

3.2.1 Blocking at Attic Vents and Access Doors

Prior to installation of insulation, install permanent blocking to prevent insulation from slipping over, clogging, or restricting air flow through soffit vents at eaves. [Install permanent blocking around attic trap doors.] [Install permanent blocking to maintain accessibility to equipment or controls that require maintenance or adjustment.]

3.2.2 Blocking Around Heat Producing Devices

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NOTE: Indicate on the drawings blocking, stand-offs and other clearances required around heat producing devices including light fixtures, appliances, furnaces, vents and flues. Indicate clearances required between these elements and insulation as well as other building components. Refer to NFPA 70, 211, 54 and 31 for design requirements. Since NFPA documents are not referenced in the text of the specification, it is incumbent upon the designer to indicate the requirements on the drawings.

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Install non-combustible blocking around heat producing devices to provide the following clearances:

a. Recessed lighting fixtures, including wiring compartments, ballasts, and other heat producing devices, unless these are certified by the manufacturer for installation surrounded by

insulation: 75 mm 3 inches from outside face of fixtures and devices or as required and, if insulation is to be placed above fixture or device, 600 mm 24 inches above fixture.

b. Masonry chimneys or masonry enclosing a flue: 50 mm 2 inches from outside face of masonry. Masonry chimneys for medium and high heat operating appliances: Minimum clearances indicated.

c. Vents and vent connectors used for venting the products of combustion, flues, and chimneys other than masonry chimneys: Minimum clearances as indicated.

f. Gas Fired Appliances: Clearances as indicated.

g. Oil Fired Appliances: Clearances as indicated.

Blocking around flues and chimneys is not required when insulation blanket, including any attached vapor retarder, has a Class 0 rating, in addition to meeting all other requirements stipulated in Part 2. Blocking is also not required if the chimneys are certified by the manufacturer for use in contact with insulating materials.

3.3 INSTALLATION

3.3.1 Insulation

Install and handle insulation in accordance with manufacturer's Instructions. Keep material dry and free of extraneous materials. Ensure personal protective clothing and respiratory equipment is used as required. Observe safe work practices.

3.3.1.1 Electrical wiring

Do not install insulation in a manner that would sandwich electrical wiring between two layers of insulation.

3.3.1.2 Continuity of Insulation

Install blanket insulation to butt tightly against adjoining blankets and to studs, rafters, joists, sill plates, headers and any obstructions. [Where insulation required is thicker than depth of joist, provide full width blankets to cover across top of joists.] Provide continuity and integrity of insulation at corners, wall to ceiling joints, roof, and floor. Avoid creating thermal bridges.

3.3.1.3 Installation at Bridging and Cross Bracing

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NOTE: Specify only unfaced blankets in installations with bridging and cross bracing. If a vapor retarder is required, specify a separate vapor retarder.
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Insulate at bridging and cross bracing by splitting blanket vertically at center and packing one half into each opening. Butt insulation at bridging and cross bracing; fill in bridged area with loose or scrap insulation.

3.3.1.4 Cold Climate Requirement

Place insulation to the outside of pipes.

3.3.1.5 Insulation Blanket with Affixed Vapor Retarder

Locate vapor retarder as indicated. Do not install blankets with affixed vapor retarders unless so specified. Unless the insulation manufacturer's instructions specifically recommend not to staple the flanges of the vapor retarder facing, staple flanges of vapor retarder at 150 mm 6 inch intervals flush with face or set in the side of truss, joist, or stud. Avoid gaps and bulges in insulation and "fishmouth" in vapor retarders. Overlap both flanges when using face method. Seal joints and edges of vapor retarder with pressure sensitive tape. Stuff pieces of insulation into small cracks between trusses, joists, studs and other framing, such as at attic access doors, door and window heads, jambs, and sills, band joists, and headers. Cover these insulated cracks with vapor retarder material and tape all joints with pressure sensitive tape to provide air and vapor tightness.

3.3.1.6 Insulation without Affixed Vapor Retarder

Provide snug friction fit to hold insulation in place. Stuff pieces of insulation into cracks between trusses, joists, studs and other framing, such as at attic access doors, door and window heads, jambs, and sills, band joists, and headers.

3.3.1.7 Sizing of Blankets

Provide only full width blankets when insulating between trusses, joists, or studs. Size width of blankets for a snug fit where trusses, joists or studs are irregularly spaced.

3.3.1.8 Special Requirements for Ceilings

Place insulation under electrical wiring occurring across joists. Pack insulation into narrowly spaced framing. Do not block flow of air through soffit vents. [Attach insulation to attic door by adhesive or staples.]

3.3.1.9 Installation of Sill Sealer

Size sill sealer insulation and place insulation over top of masonry or concrete perimeter walls or concrete perimeter floor slab on grade. Fasten sill plate over insulation.

3.3.1.10 Special Requirements for Floors

Hold insulation in place with corrosion resistant wire mesh, wire fasteners, or wire lacing.

3.3.1.11 Access Panels and Doors

Affix blanket insulation to access panels greater than one square foot and access doors in insulated floors and ceilings. Use insulation with same R-Value as that for floor or ceiling.

3.3.2 Installation of Separate Vapor Retarder

Apply continuous vapor retarder as indicated. Overlap joints at least 150 mm 6 inches and seal with pressure sensitive tape. Seal at sill, header, windows, doors and utility penetrations. Repair punctures or tears with pressure sensitive tape.

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NOTE: Suggestions for improvement of this specification will be welcomed using the Navy "Change Request Forms" subdirectory located in SPECSINTACT in Jobs or Masters under "Forms/Documents" directory or DD Form 1426. Suggestions should be forwarded to:

Commanding Officer
Seabee Logistics Center
NAVFAC 15G/CESO 15E
4111 San Pedro Street
Port Hueneme, CA 93043-4410

FAX: (805) 985-6465/982-5196 or DSN 551-5196

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